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AUTHOR Kaufman, Nancy J.; Randlett, Alice L.
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ABSTRACT

To determine if able and disabled college student readers can be distinguished by their awareness and use of metacognitive and cognitive strategies, 36 freshmen students enrolled in a reading and study skills class were classified as either good or poor readers based on their Nelson-Denny Reading Test scores. After reading five short passages and answering comprehension questions, students were interviewed about their reactions to the reading task, past reading experiences, and locus of control. Following the interviews, students completed a questionnaire on their conscious use of strategies. No significant differences were found between high and low comprehenders in use of observable strategies, but large differences occurred in the two groups' use of nonobservable, "in-head" strategies such as visualizing material. Overall, high comprehenders gave one-third more responses when asked what they did to lessen their confusion. Explanations for these differences might include the lack of direct teaching in higher order thinking skills or the difficulty some students have in assimilating these skills. Remediation might begin with making students aware of their learning strengths and weaknesses and of their cognition. (MM)

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Nancy J. Kaufman
Alice L. Randlett

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THE USE OF COGNITIVE AND METACOGNITIVE STRATEGIES OF GOOD AND POOR READERS AT THE COLLEGE LEVEL

A number of social and political factors in the past several years - the passage of P.O. 94-142, the Rehabilitation Act of 1973, high unemployment, more liberal admissions policies of universities, etc., - have resulted in students entering colleges and universities with increasingly diverse abilities and aptitudes. Included in this population are a surprisingly large number of students with poor reading abilities. Study skills labs and remedial programs have been developed at the college level to assist the poor reader. Professors, however, are faced with the dilemma of finding beneficial, efficient approaches for the remediation of these students. We're also faced with justification of continued funding for reading and study skills programs, as well as developing good instructional techniques to help justify their continued existence.

Torgesen (1982) has hypothesized that the reason learning disabled children exhibit poor academic performance is that they are "inactive learners." They fail to generate spontaneously

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appropriate task strategies necessary for academic success. Research findings have supported this supposition. Researchers have also found that cognitive and metacognitive strategy training has had some success in remediation of children (Wong and Jones, 1981). There is a paucity of information, however, when it comes to studies of metacognitive awareness at the college level.

Metacognition in this study uses Flavell's (1978) defintion, "Metacognition refers to one's knowledge, one's awareness, concerning one's own cognitive processes and products or anything related to them, e.g., the learning-relevant properties of information or date...Metacognition refers, among other things, to the active monitoring and consequent regulation and orchestration of these processes in relation to the cognitive objects or data on which they bear, usually in the service of some concrete goal or objective."

Hare and Pulliam in a 1980 study, found that college students were able to report how they believed they read, and, in fact, students' retrospections about their reading behaviors are acute enough to discriminate significantly between high and low scores on a reading achievement test, and the data suggested that high scoring readers were more actively involved in reading. In 1981, Hare found that good adult readers exhibited greater control of their reading than poor readers and demonstrated more awareness of problem-causing situational and textual features. While poor readers noted essentially the same kinds of problems they were not as cognizant of situations where they didn't understand.

Gambrell and Heathington reported in 1981 that adult poor readers were unaware of several important parameters of reading while adult good readers were extremely sensitive to both task and strategy dimensions of reading. Adult poor readers lacked such sensitivity-especially with respect to the strategy dimensions of reading.

The purpose of this study is to investigate the awareness of metacognitive and cognitive strategies in the disabled college student reader and compare it to strategy awareness of the able college student reader.

METHODOLOGY

Subjects

The 36 subjects in this study were selected from freshmen enrolled in a reading and study skills class at our medium-sized university, the University of Wisconsin-Stevens Point. All enrollees were given the Nelson-Denny Reading Test during the first week of class. Good readers were selected at random from those who scored above the 80th percentile on the comprehension subtest, while poor readers were randomly selected from those who scored in the lower 20th percentile. Each subject was seen individually by an examiner with the interview conducted before they received any formal training in reading and study skills.

Procedure

Subjects read silently five short passages from the Davis Reading Test, Form 1A, and answered written comprehension questions related to each passage. The examiners observed and

counted subjects' non-verbal behavior during the reading task, for instance, flipping back and forth between questions and passages.

Subsequently, readers were interviewed about their perspective on the reading task, e.g., were they confused during reading? What they did to lessen confusion, what did they do generally to learn? The interview consisted of a formal but non-directive series of questions. Subjects were also asked about past reading experiences and locus of control. All interviews were taped and are in the process of being transcribed and analyzed. Subjects' responses to the questions were recorded simutaneously by the examiners.

At the conclusion of the interview,each subject was given a 32-item written, forced-choice questionnaire to complete regarding the strategies they used when reading and/or taking tests.

Rating

During the interview the subjects reported the strategies that they used to lessen their misunderstandings. These strategies were recorded by the examiners. Subsequently, the examiners rated these responses and assigned them to one of three possible categories: I. Strategies that affect the learning environment. In this category were placed all the responses that "set the tone" for the learning experience, e.g., cleaning one's room, finding a quiet place, avoiding distractions. II. Strategies that aid performance or involve production of a task and can be observed. In this category were placed strategies that are concrete, defined and are often taught, e.g., skimming, slowing down, rereading, using a

pencil to keep one's place. III. Strategies that are engaged in "inside-the-head" (Samuels, 1983) that aid in task performance. Included in this category were strategies that readers report using, but in which they cannot be seen engaging. These strategies are complex, unobservable mental operations: visualizing, imagining, putting oneself in the author's place, concentrating, etc.

Three examiners rated each of the 178 responses. Disagreement occurred on the placement of six responses. In each of these instances the majority ruled - the response was included in the category where two of the three readers agreed. In no instance was there a three-way split.

Self-reported strategy knowledge and employment were analyzed for significance. Results of the study will be discussed in terms of implications for remediation of poor readers at the college level.

While the students' responses to the interview were both taped and written down by the examiners, only the written responses were analyzed for significance for this preliminary study.

RESULTS

The taped interviews are in the process of being transcribed and will be reported in a subsequent paper along with the results of the forced-choice questionnaire.

The following research questions were formulated to determine the metacognitive differences between the high and low comprehenders:

First, do the number of metacognitive responses to the questions regarding what the reader does to lessen confusion significantly

differ between the high comprehenders and low comprehenders? And, is there a significant difference between the types of responses given by high and low comprehenders?

Research question 1. A chi-square test of statistical significance was employed to determine if the difference was significant between the high and low comprehenders on the number of responses they gave when asked what they did to lessen their confusion when they are getting ready to read, during reading or during test taking. The results demonstrated that high comprehenders gave significantly more responses than low comprehenders ($X^2_1 = 6.85$, $p < .05$).

Research question 2. In order to determine whether there was a significant difference between the type of responses given by the high comprehenders and low comprehenders, two chi-square tests of statistical significance were employed. It was found that there was no significant difference in the numbers of responses between the high and low comprehenders in Category II (Strategies that can be observed) ($X^2_1 = .903$, $p > .05$), but that there was a significant difference in the number of responses between the high and low comprehenders in Category III (Strategies that are engaged in "inside-the-head") ($X^2_1 = 11.75$, $p < .05$).

DISCUSSION

A common finding in the reading research is that effective strategy use distinguishes good and poor readers (Aulls, 1981; Hare, 1981; Gambrell and Heathington, 1981). This study supports and, perhaps, elucidates these findings. The good comprehenders in the present study did indeed report using one-third more

strategies than the poor comprehenders to help repair their misunderstandings.

A finding of greater interest, however, is the difference between the types of strategies used by the good and poor comprehenders There was no difference between the two groups of reported strategy use in Category II, but there was a significant difference of reported Category III strategy use. Both good and poor comprehenders were as likely to report using strategies that were observable and concrete. They said, for example; they reread the material, looked at the questions first, or asked someone else when they didn't understand what they were reading. Good readers were not more proficient or aware of using these strategies. Poor readers reported using strategies in Category II when they had difficulty understanding as often as good readers.

This was not the case with Category III strategy usage, however. These "inside-the-head," unobservable, mental operations were much more likely to be reported by the high comprehenders. Good readers said they would "try to make connections," "make guesses from the context," "focus," or "visualize" significantly more often than the poor comprehenders.

It is interesting and useful to speculate about what may account for these differences in the types of strategies used by poor comprehenders. Why do they exhibit knowledge and awareness of the more complex mental operations?

One possible explanation is that low readers have never been taught to use higher-order thinking skills or reflective problem

solving skills. They may have been tracked in low groups through their elementary and high school years and received instruction that involved primarily associative learning experiences. If they had reading difficulties in school they could have had instruction that emphasized decoding skills rather than deriving meaning from the text.

Further, the Category II strategies are more commonly, or even inadvertently, taught to students. Teachers often say, "Use your pencil to follow along," or "Reread this material if you don't understand it the first time." Frequently, units are included in junior high and high school English classes which teach students to skim, take notes, read the subtitles, or use a dictionary--all Category strategies. Students may feel that these are the skills in which they are supposed to engage in order to be good readers, even if they don't in fact execute them. It is far less common for a teacher to advise students to visualize, absorb the colors, or connect the ideas, for example. And even if teachers do suggest these techniques it is difficult for the students to understand how to use them. These skills are difficult to model and teach, as well.

But, perhaps, none of these skills (Category II and III Strategies) are systematically taught in the schools. It is possible that the high comprehenders or good readers automatically incorporate these strategies into their repertoire without ever having been formally taught. Or, they may have higher IQ's than the low readers and this accounts for their better reading ability and more advanced

strategy use. A higher IQ may also account for their being more articulate and, therefore, more able to relate what strategies they employ. (The low comprehenders were as articulate in reporting Category II strategies, however).

A further explanation may be that poor comprehenders are also poor decoders. Their slower decoding skills could engage all the time in their short term memory and leave little opportunity for focusing on meaning or comprehension monitoring. If they are unaware that they don't understand they won't spontaneously generate strategies to repair their misunderstanding.

IMPLICATIONS FOR REMEDIATION

The results of this study show that poor comprehenders lack the awareness and the ability to use strategies that involve higher order, more complex thinking skills. The question then becomes how these strategies can be taught, or if they can be taught at all. How can students be taught to be aware of and engage in thinking skills that cannot be modeled or even explained directly?

One avenue that may be worth exploring more closely is Torgesen's (1982) "inactive learner" hypothesis. Low comprehenders may be "inactive" in their approach to learning. It would be possible for a reader to engage in all of the Category II strategies and still not understand the meaning of what is being read. Unless readers actively, mentally manipulate the words and phrases, unless readers make mental connections and inferences, they may understand little of the meaning in the text. Reading

the words in the subtitles, skimming, pointing, rereading, etc., does not guarantee comprehension. Activating the reader's mental operations is essential for understanding. It is as essential as activating physical operations when learning to ride a bicycle or ice skate.

Creating an awareness of the process of mental activity in the learner is an appropriate place to begin. Too often learners are not made aware of their learning strengths and weaknesses or their cognition. It seems of the utmost importance that teaching begin to focus on helping learners develop their awareness. A lesson that beings with a discussion (not a lecture or a presentation) to motivate, to develop insight, to share potential learning hurdles and alternative solutions or strategies for problem solving is critical. An independent work time where students have to execust mental operations while the teacher is advising, supporting and correcting is essential. A final discussion where students can share strategies, problems, likes and dislikes of the learning situation and can learn to synthesize is necessary. Incorporating these elements in a lesson is fundamental in activating "inactive learners" and in making them aware of their cognition and task and strategy variables.

Learners may also become "active" by using the sequence of steps in Cognitive Behavior Modification (Meichenbaum & Asarnow, 1979) or Reciprocal Teaching Strategies (Brown, 1983). Both these techniques lend themselves to helping make learners more aware of their own cognitive strengths and weaknesses.

Helping learners become aware of their own cognition, and of tasks and strategy variables may prepare them to grasp the intricacies and complex structure of problem solving and learning. This goes beyond the application of learned procedures. Poor comprehenders need to learn systematic procedures in task production, but to succeed they must be able to manipulate knowledge so they can be in control of their own learning processes.

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